

REMARKS

In reply to the Office Action of May 15, 2009, Applicants have amended claims 1, 3, 5, 15, 26, and 32, and canceled claim 13. Accordingly, claims 1-12, 14-15, and 22-32 are pending, with claims 1, 3, and 32 in independent form.

The Action objected to the title as allegedly failing to be sufficiently descriptive of the claimed invention. In this reply, Applicants have amended the title to relate more closely to the subject matter of the pending claims. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objection to the title.

Claims 5, 15, and 26 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. The Action states that “[r]egarding claims 5, 15, and 26, [it] is not clear how an LED is a detector.” As best Applicants determine, it appears that the Action contends that identifying the semiconductor chip as a LED is inconsistent with the chip functioning as a detector for incident radiation. However, merely because a semiconductor chip, by virtue of its construction, *can* function as a LED does not mean it *does* function as a LED in a device. To the contrary, Applicants have discovered – as explained in the present application – that under certain conditions, a chip that would otherwise function as a LED (e.g., a light emitter) can instead function as a detector for radiation.

To clarify the nature of this discovery and emphasize that the chip does not actually function as an emitter in the claimed detectors, Applicants have amended claims 5 and 26 to cover radiation detectors where the at least one semiconductor chip “comprises a layer structure that corresponds to a layer structure of a light emitting diode.” Further, Applicants have amended claim 15 to recite that “the at least one semiconductor chip comprises a layer structure configured so that if the at least one semiconductor chip is operated to emit light, a central emission wavelength of the emitted light is in an infrared region of the spectrum.” Applicants believe that amended claims 5, 15, and 26 fully comply with the requirements of 35 U.S.C. § 112, second paragraph, and respectfully request reconsideration and withdrawal of the rejections of claims 5, 15, and 26 on these grounds.

Claims 1, 3-5, 10, 14-15, 23, and 26 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Vriens et al. (U.S. Patent No. 5,813,753, "Vriens"). Claims 1-4, 11-12, 23, 25-26, 29-30, and 32 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Norton (U.S. Patent No. 5,373,182, "Norton"). Further, claims 6-9, 13-14, 22, 24, 27-28, and 30-31 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Norton alone, or unpatentable over Norton in view of Manning (U.S. Patent No. 3,903,413, "Manning").

Applicants do not concede any of these rejections. However, to expedite prosecution, Applicants have amended each of independent claims 1, 3, and 32 to include certain features of previous claim 13, which has been canceled. As amended, claims 1 and 32 cover radiation detectors where "the radiation detector has a detector sensitivity such that at an arbitrary wavelength, a difference between corresponding values of the detector sensitivity and the predetermined spectral sensitivity distribution is less than 40%." Similarly, amended claim 3 covers radiation detectors where "the radiation detector has a detector sensitivity such that at an arbitrary wavelength, a difference between corresponding values of the detector sensitivity and the standard spectral sensitivity distribution of a human eye is less than 40%." Applicants believe that none of the references of record disclose or suggest such radiation detectors for at least the following reasons.

Previous claim 13 stands rejected as allegedly being unpatentable over Norton. In particular, the Action admits that Norton does not disclose that "a difference between corresponding values of the detector sensitivity and the standard spectral sensitivity distribution of the human eye is less than 40% as recited in claim 13" (Action at page 7). Likewise, Applicants have been unable to find in Norton (or in Vriens or Manning) any disclosure or suggestion regarding a radiation detector that has a detector sensitivity such that at an arbitrary wavelength, a difference between corresponding values of the detector sensitivity and a predetermined spectral sensitivity distribution (e.g., a standard spectral sensitivity distribution of a human eye) is less than 40%. Applicants therefore agree with the Action that Norton does not disclose such radiation detectors (nor does either Vriens or Manning).

The Action alleges, however, that “[i]t has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum ‘ranges, or measurements’ involves only routine skill in the art” (Action at page 8). Therefore, the Action concludes, “[i]t would have been obvious to one skilled in the art to provide the tolerances recited above for the purpose of optimizing spectral bandwidth of [the] radiation detector” (Action at page 8). Applicants respectfully disagree with the Action’s reasoning in this regard. Instead, Applicants believe that such detectors would not have been obvious to a person of ordinary skill in the art based on Norton.

As best Applicants can determine, Norton provides no reason for a person of ordinary skill in the art to construct integrated IR and visible detectors such that a difference between corresponding values of the detector sensitivity and a predetermined spectral sensitivity distribution (e.g., a standard spectral sensitivity distribution of a human eye) is less than 40%. Applicants have been able to find no mention in Norton related to comparing actual detector sensitivity to any sort of predetermined spectral sensitivity distribution. In Norton’s devices, a visible detector and one or more infrared detectors are integrated on a single semiconductor chip. But Norton makes no mention of a “predetermined spectral sensitivity distribution” as recited in amended claims 1 and 32, or a “standard spectral sensitivity distribution of a human eye” as recited in claim 3. Norton performs no comparison between the sensitivity of his detector and a predetermined or standard spectral sensitivity distribution. Indeed, Norton does not even disclose *measuring* the sensitivity of his detector as a prerequisite for making such a comparison.

In contrast, in the present application, there are two different sensitivity distributions: the detector sensitivity distribution and the predetermined or standard sensitivity distribution. The detector sensitivity distribution has a sensitivity maximum at a first wavelength and a first distribution of sensitivities as a function of wavelength. The predetermined or standard distribution has a sensitivity maximum at a second wavelength and a second distribution of sensitivities as a function of wavelength. In general, the first and second wavelengths can differ, and the first and second distributions can differ.

For comparative purposes, detector sensitivity distribution is normalized to 100% at the first wavelength, and the predetermined or standard sensitivity distribution is normalized to 100% at the second wavelength (see, e.g., Applicants' specification at page 3, paragraphs 4-6). Amended claims 1, 3, and 32 reflect Applicants' discovery that detectors can be fabricated such that a difference between corresponding values of the detector sensitivity and the predetermined or standard spectral sensitivity distribution is less than 40%. Thus, to determine such a difference, the detector sensitivity as a function of wavelength is measured and compared with the predetermined or standard sensitivity distribution.

But, as best Applicants can determine, Norton neither discloses nor suggests measuring the sensitivity of his detector, or comparing the sensitivity of his detector to a predetermined or standard spectral sensitivity distribution. The Action states that "[i]t has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum 'ranges, or measurements' involves only routine skill in the art" (Action at page 8). Without addressing whether this holding is correctly applied in this circumstance, the key language of the holding for purposes of the present claims is "where the general conditions of a claim are disclosed." Norton does not disclose the "general conditions" of claims 1, 3, and 32, because Norton simply provides no disclosure or suggestion regarding comparing detector and predetermined or standard sensitivity distributions. The situation differs, for example, from a situation in which a prior art reference discloses a different range from the claimed range. In the present case, as best Applicants can determine, Norton provides no disclosure at all of the above limitations of claims 1, 3, and 32, and Norton does not even take the steps that would be required to determine values corresponding to these limitations.

Thus, the claimed difference between spectral sensitivity distributions in claims 1, 3, and 32 is not merely a matter of discovering optimum ranges or measurements as the Action implies. Instead, the claimed difference results from Applicants' discovery of methods for fabricating detectors that have spectral sensitivity distributions that are related to predetermined or standard sensitivity distributions. The Action's allegation that the claimed difference would have been obvious "for the purpose of optimizing spectral bandwidth" (Action at page 8) of the radiation

detector is difficult to reconcile with Norton, as Norton provides no suggestion or reason for the need to “optimize” spectral bandwidth, nor does Norton give any guidance as to what degree of “optimization” would be necessary. Indeed, it is likely that the extent of any optimization would depend upon the particular application for which Norton’s detectors are used, and Norton does not disclose any applications that would suggest the particular difference between the detector sensitivity distribution and the predetermined or standard sensitivity distribution recited in claims 1, 3, and 32.

Moreover, claim 3 covers radiation detectors where the difference between corresponding values of the detector sensitivity and a standard sensitivity distribution of a human eye is less than 40%. The application notes that “[t]he object of the invention, therefore, is to specify a radiation detector ... [that] offers a good match with the defined spectral sensitivity distribution, particularly that of the human eye” (Applicants’ specification at page 2, paragraph 1). When the detector sensitivity distribution is matched in this way, the detector’s response to, and detection of, incident light is similar to the response of a human eye to the same light.

Norton simply provides no disclosure regarding the sensitivity distribution of a human eye. As best Applicants can determine, Norton’s detector is not fabricated such that its sensitivity is adjusted to match the sensitivity of a human eye. To the contrary, while Norton’s detector is configured to be sensitive to both visible and infrared radiation across a relatively broad spectral band, Norton states that “the human eye is not sensitive to this entire spectrum” (Norton, col. 2, lines 6-7). In other words, Norton seeks not to match the spectral sensitivity of his detector to that of the human eye, but in fact to *extend* the sensitivity of his detector *beyond* the range of the human eye. Thus, based on Norton’s disclosure, one of ordinary skill in the art would find no reason to modify Norton’s devices such that a “difference between corresponding values of the detector sensitivity and a standard sensitivity distribution of a human eye is less than 40%,” as required by claim 3.

In view of the foregoing, Applicants believe that amended claims 1, 3, and 32 are patentable over Norton, Vriens, and Manning. Applicants therefore respectfully request reconsideration and withdrawal of the rejections of claims 1, 3, and 32 under 35 U.S.C. § 102(b).

Claims 2, 4-12, 14-15, and 22-31 each depend from one of claims 1 and 3, and are therefore patentable over Norton, Vriens, and Manning for at least the same reasons as claims 1 and 3. Therefore, Applicants also respectfully request reconsideration and withdrawal of the rejections of claims 2, 4-12, 14-15, and 22-31 under 35 U.S.C. §§ 102(b) and 103(a).

In view of the foregoing, Applicants ask that the application be allowed.

Canceled claims, if any, have been canceled without prejudice or disclaimer. Any circumstance in which Applicants have: (a) addressed certain comments of the Examiner does not mean that Applicants concede other comments of the Examiner; (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims; or (c) amended or canceled a claim does not mean that Applicants concede any of the Examiner's positions with respect to that claim or other claims.

Fees for the Petition for Extension of Time are being paid concurrently on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account 06-1050, referencing Attorney Docket No. 12406-0164US1.

Respectfully submitted,

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